



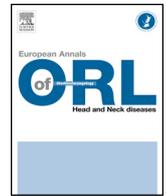
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## Letter to the Editor

### Sudden sensorineural hearing loss and SARS-CoV-2: Donâ€™t forget the standard work-up!

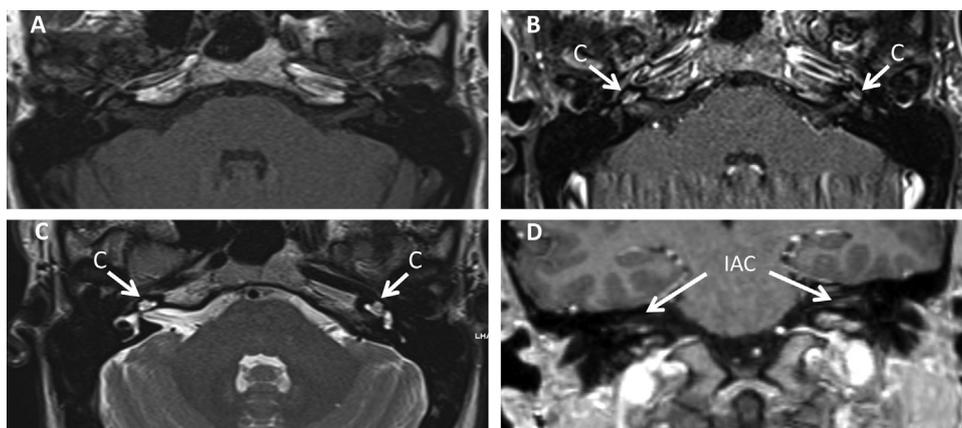


Dear Editor-in-Chief,

A growing number of cases of sudden onset of isolated hearing loss are being described as a feature of SARS-CoV-2 infection [1]. Auditory neuropathy associated with cochleitis has already been described in the context of viral infection [2]. Several mechanisms have been proposed: either an indirect mechanism via an antibody response that would cross-react with an inner ear antigen, or a direct mechanism due to invasion of the cochlear nerve or anterior labyrinth [2]. In the context of the ongoing COVID-19 pandemic, SARS-CoV-2 RT-PCR should therefore be considered in patients with sudden hearing loss. However, even when RT-PCR is positive, a comprehensive work-up must be performed. We describe the case of a 29-year-old man with no prior history who attended our clinic with sudden onset of bilateral hearing loss occurring 10 days previously, with no other signs on clinical examination. As his wife reported anosmia-ageusia, Reverse Transcription Polymerase Chain Reaction (RT-PCR) SARS-CoV-2 was performed and proved to be positive. Audiometry revealed moderate bilateral sensorineural hearing loss. Cochleitis associated with bilateral auditory neuropathy and signs of inflammation of endolymphatic fluid were visualized on MRI (Fig. 1). Positive syphilis serology was also observed on the laboratory work-up (TPHA: 1/5120 and VDRL: 1/4). Lumbar puncture demonstrated signs of lymphocytic meningitis.

SARS-CoV-2 Cerebrospinal fluid PCR was negative. Neurosyphilis was suspected but not confirmed (total antibodies by EIA: 2 and RPR antibody index: 0.3). Treatment consisted of intravenous antiviral therapy (aciclovir 750 mg twice daily) for 3 days, followed by ceftriaxone (2 g daily) for 14 days and oral corticosteroids (prednisolone 1 mg/kg daily) in accordance with learned society guidelines [3] for 5 days. Complete recovery of hearing was observed 18 days after starting treatment.

It was very difficult to confirm the aetiology of sudden hearing loss in this case. A previously published clinical case report presented positive SARS-CoV-2 RT-PCR and another synchronous diagnosis (sinonasal polyposis complicated by osteomyelitis of the lateral wall of the sphenoid sinus) in the context of meningoencephalitis [4]. Cases of neurosyphilis with sudden hearing loss have been previously described, confirming the neurotropism of syphilis, but only 2 cases of sudden bilateral hearing loss in a context of polyneuritis have been published [5,6]. Moreover, anterior labyrinthitis has never been described in the course of this disease. The case reported here could also correspond to neurosyphilis associated with SARS-CoV-2 infection that may have been facilitated by the presence of syphilis, as in HIV-syphilis co-infections [7]. Sudden hearing loss could also have been the direct consequence of SARS-CoV-2 infection in view of the rapid recovery of hearing. Although no definitive conclusion can be reached, comprehensive assessment of this case of sudden hearing loss with positive SARS-CoV-2 RT-PCR would have prevented the serious consequences of neurosyphilis by allowing initiation of appropriate treatment.



**Fig. 1.** MRI of brain, inner ear and cerebellopontine angles showing bilateral isointense cochleitis on T1-weighted sequences (A), and a hyperintense signal on gadolinium-enhanced T1-weighted sequences (B). The hypointense signal of the endolymph on T2-weighted sequences is in favour of inflammation (C). The hypersignal of both auditory nerves on gadolinium-enhanced T1-weighted sequences is in favour of auditory neuropathy (D). C: cochlea. IAC: Internal auditory canal.

## Disclosure of interest

The authors declare that they have no competing interest.

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